

REMARKS

Claims 1-13 and 15-23 are pending in the application. Claims 1-7, 12, and 13 have been amended, claim 14 has been cancelled, and new claims 15-23 have been added by this response. Reconsideration and allowance of Applicant's claims are respectfully requested in light of the amendment and the following remarks.

Applicant's representative wishes to thank Examiner Lanier for the courtesy extended during the interview of July 18, 2005. The following remarks are made in light of the interview.

The drawings were objected to as being informal. Formal drawings are submitted herewith as requested in the action. Therefore, reconsideration and withdrawal of this objection is respectfully requested.

Claim 14 was rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention. It is respectfully submitted that this rejection has been rendered moot by canceling the claim.

Claims 1-7 were amended to provide additional antecedent basis for elements of the claim and thereby improve the readability of the claims. It is respectfully submitted that these changes do not affect the scope of the claims and are not directed to patentability.

Claims 12 and 13 were amended to correct the preamble to correspond with the preamble of the independent claim 9 from which they depend. It is respectfully submitted that these changes do not affect the scope of the claim and are not directed to patentability.

Claims 1-14 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,133,876 to Fullerton et al. ("Fullerton"). This rejection is respectfully traversed.

Fullerton describes a system for position determination by impulse radio for application in cell phones. Such position determination may be useful in determining the location of user in emergency situations. The basic method of Fullerton is described at col. 4, lines 37. According to Fullerton, a first transceiver having a first clock providing a first reference signal. A second transceiver has a second clock that provides a second reference signal. The second transceiver whose position is to be determined is placed at a distance from the first transceiver.

A first sequence of pulses is transmitted from the first transceiver. The first sequence of pulses is received by the second transceiver. The second transceiver is synchronized with the first sequence of pulses. A second sequence of pulses is transmitted from the second transceiver. The first transceiver receives the second sequence of pulses and the first transceiver is synchronized with the second sequence of pulses. A delayed first reference signal is generated in response to the synchronization with the second sequence of pulses. A time difference between first reference signal and the delayed first reference signal is measured. The time difference indicates a total time of flight of the first and second sequence of pulses allowing the distance between the first and the second transceiver to be determined.

Applicant's claim 1 recites, among other things, "A method for synchronizing a master clock to a slave clock located in master and slave devices communicating with one another via a laser signal beam and a communication channel, each of the master and slave devices including a homodyne detector for determining a respective correlation pattern with respect to a phase tuned local oscillator, comprising: recording master and slave correlation patterns while the laser signal beam cycles between first and second operating modes; transmitting the master correlation pattern and associated first time at which the laser signal beam shifted between the first and second operating modes and second time at which the laser signal beam shifted between the second and first operating modes over the communications channel; comparing a portion of the master correlation pattern between the first and second times to the slave correlation pattern to thereby determine the time offset between the first and slave correlation patterns; and applying the time offset to the slave clock." It is respectfully submitted that Fullerton is silent with regard to at least these elements of Applicant's claims.

As pointed out during the interview, claim 1 recites that a master and a slave device communicate using a laser signal beam and that correlation patterns are generated based on the laser signal beam cycling between first and second operating modes (e.g., cycling between squeezing and non-squeezing of the laser beam signal). Similar recitations appear in independent claim 5 and 9. However, as pointed out during the interview, Fullerton is silent with regard to any use of a laser beam and appears to be primarily concerned with radio frequency communications. As such, Fullerton also is silent with regard to generating any correlation patterns based on the laser signal beam.

As Fullerton does not describe or suggest each and every element of Applicant's claims 1, 5, and 9 it cannot anticipate Applicant's claims, and Fullerton cannot serve as a reference under Section 102(e).

Claim 2-4, 6-8, and 10-13 depend from claims 1, 5, and 9, respectively, and are believed allowable for at least the reasons given above for these independent claims.

In addition, Applicant points out that Fullerton also is silent with regard to dependent claims. For example, as recited in claims 2, 6, and 10, Fullerton is silent with regard to any teaching of a master correlation pattern being generated in response to a master local oscillator beam and a time-delayed version of the laser signal beam.

It is also noted that claims 8 and 13 were rejected over Fullerton. The action asserted that the recited variation of claim 8 and 13 was shown in Fullerton. Applicant respectfully disagrees. As pointed out in the Interview, the variance described at the beginning of col. 9 of Fullerton is a variance of a transmitted signal's modulation value. As explain in the interview, Fullerton is concerned with the location or position of a cell phone including an impulse radio. Because impulse radio systems may have thousands of voice channels, to understand the capacity of an impulse radio system one must carefully examine the performance of the cross correlator. FIG. 6B of Fullerton shows the "cross correlator transfer function" 602. This represents the output value of an impulse radio receiver cross correlator as a function of received pulse timing. When the system is synchronized with the intended transmitter, the cross correlator's output has a swing of maximum value, e.g., between +/- 1 volt (as a function of the transmitter's modulation). Other in-band transmissions would cause a variance to the cross correlator's output value. This variance is a random variable and can be modeled as a Gaussian white noise signal with a mean value of zero. For example, as the number of interferers increases the variance increases linearly. By integrating over a large number of pulses, the receiver develops an estimate of the transmitted signal's modulation value.

In marked contrast, the variance described in Applicant's claims 8 and 13 is the variance between a master and slave correlation pattern based on the laser beam signal. In addition, the variance is expressed by the equation $V = \langle [(\hat{I}/\lambda) - (g/\mu)\hat{J}]^2 \rangle$

where:

V is the variance:

μ is the phase offset associated with a master homodyne detector generating the master correlation pattern corresponding to \hat{J} ;

\hat{J} is the idler homodyne current signal received by the master device;

λ is the phase offset associated with a slave homodyne detector generating the slave correlation pattern corresponding to \hat{I} ;

\hat{I} is the signal homodyne current signal received by the slave device; and

g is a scaling factor.

It is respectfully submitted that Fullerton is silent with regard to determining such a variance or recited equation for doing so.

As Fullerton does not describe each and every element of Applicant's claims, it cannot anticipate Applicant's claims. Therefore, it is respectfully requested that the rejection of claims 1-13 be reconsidered and withdrawn.

It is respectfully submitted that all claims are in condition for allowance, and early notice of the same is respectfully solicited. If any questions remain, the Examiner is invited to contact the attorney at the telephone number listed above.

Please apply any charges and credits to deposit account no. 50-0967.

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Serial No. : 09/943,433
Filed : August 30, 2001
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Attorney's Docket No.: 82343

IN THE DRAWINGS:

Please amend the drawings by replacing Figs. 1-3 with the supplemental sheets 1-3 of formal drawings for Figs. 1-3.